

AMENDMENTS TO THE CLAIMS

1. (Original) A fluid dynamic bearing defined by the interface of a hub and a sleeve, the hub having a vertical shaft portion configured to rotate within the sleeve, and a horizontal body portion configured to rotate above the sleeve, the bearing comprising:

a first gap region between the shaft portion of the hub and the sleeve;

a second gap region between the horizontal body portion of the hub and the sleeve;

a volume of lubricating fluid within the first gap; and

an oil pumping groove pattern disposed at least partially along the second gap, the oil pumping groove pattern impelling oil toward the shaft when the shaft portion of the hub is rotated within the sleeve.

2. (Original) The fluid dynamic bearing of claim 1, wherein:

the first gap region comprises a substantially vertical gap; and

the second gap region comprises a substantially horizontal gap portion.

3. (Original) The fluid dynamic bearing of claim 1, further comprising a third gap region between the hub and an outer diameter portion of the sleeve.

4. (Original) The fluid dynamic bearing of claim 3, wherein the third gap is configured to form a capillary seal.

5. (Original) The fluid dynamic bearing of claim 1, wherein the hub further comprises a radial shoulder for receiving a disc.

6. (Original) The fluid dynamic bearing of claim 5, wherein the hub and sleeve are part of a spindle motor for a disc drive system.

7. (Original) The fluid dynamic bearing of claim 1, wherein the shaft portion is adapted to rotate within the sleeve on a counterplate.

8. (Original) The fluid dynamic bearing of claim 1, wherein the oil pumping groove pattern defines at least one groove formed in a bottom surface of the horizontal body portion of the hub.

9. (Original) The fluid dynamic bearing of claim 1, wherein the oil pumping groove pattern defines at least one groove formed in a top surface of the sleeve.

10. (Original) The fluid dynamic bearing of claim 1, wherein the oil pumping groove pattern defines a spiral pattern.

11. (withdrawn) A fluid dynamic bearing defined by the interface of a shaft and a sleeve, wherein the sleeve is fitted with a hub and configured to rotate around the shaft, and the shaft is fitted with a shield under which the sleeve rotates, the bearing comprising:

a first gap region between the shaft and the sleeve;

a second gap region between the shield and the sleeve;

a volume of lubricating fluid within the first gap; and

an oil pumping groove pattern disposed at least partially along the second gap, the oil pumping groove pattern impelling oil toward the shaft when the shaft portion of the hub is rotated within the sleeve.

12. (withdrawn) The fluid dynamic bearing of claim 11, wherein:

the first gap region comprises a substantially vertical gap; and

the second gap region comprises a substantially horizontal gap portion.

13. (withdrawn) The fluid dynamic bearing of claim 11, further comprising a third gap between the shield and an outer diameter portion of the sleeve.

14. (withdrawn) The fluid dynamic bearing of claim 13, wherein the third gap is configured to form a capillary seal.

15. (withdrawn) The fluid dynamic bearing of claim 11, wherein the hub further comprises a radial shoulder for receiving a disc.

16. (withdrawn) The fluid dynamic bearing of claim 15, wherein the hub, sleeve, and shaft are part of a spindle motor for a disc drive system.

17. (withdrawn) The fluid dynamic bearing of claim 11, wherein the sleeve is adapted to rotate around the shaft on a base adapter.

18. (withdrawn) The fluid dynamic bearing of claim 11, wherein the oil pumping groove pattern defines at least one groove formed in a bottom surface of the shield.

19. (withdrawn) The fluid dynamic bearing of claim 11, wherein the oil pumping groove pattern defines at least one groove formed in a top surface of the sleeve.

20. (withdrawn) The fluid dynamic bearing of claim 11, wherein the oil pumping groove pattern defines a spiral pattern.

21. (new) A hub and sleeve bearing, comprising;

a hub comprising an annular surface surrounding and coupled to a first end of an outer cylindrical surface, the annular surface being substantially perpendicular to an axis of the outer cylindrical surface;

a sleeve comprising an inner cylindrical surface that is configured to face the outer cylindrical surface in a substantially coaxial orientation, the inner cylindrical surface and the outer cylindrical surface defining a first gap, wherein at least a portion of at least one of the inner cylindrical surface and the outer cylindrical surface comprises a first groove pattern formed therein, the first groove pattern being configured as a fluid dynamic journal bearing; and

wherein the sleeve further comprises an annular surface configured to be substantially parallel to the annular surface of the hub, the annular surface of the sleeve and the annular surface of the hub defining a second gap, wherein at least a portion of at least one of the annular surface of the sleeve and the annular surface of the hub comprises a second groove pattern formed therein, the second groove pattern being configured as a fluid dynamic thrust bearing, and wherein the fluid dynamic thrust bearing is further configured to pump fluid toward the axis of the outer cylindrical surface.

22. (new) The hub and sleeve bearing assembly of claim 21, wherein the second gap is further configured to form a capillary seal by diverging distally to the axis of the outer cylindrical surface.

23. (new) The hub and sleeve bearing assembly of claim 21, further comprise a radial hub surface at a second end of the outer cylindrical surface, the radial hub surface being configured to be substantially parallel to a radial surface of the sleeve, wherein the radial surface of the hub and the radial surface of the sleeve are further configured to be in contact when the hub and sleeve are not in relative rotation and to define a third gap when the hub rotates relative to the sleeve.

24. (new) The hub and sleeve bearing assembly of claim 23, wherein the second gap is further configured to form a capillary seal by diverging distally to the axis of the outer cylindrical surface.